GUEST EDITORIAL PREFACE

Special Issue on Workshops of the 8th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth 2013)

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The Pervasive Healthcare community has a broad scope of research topics and concerns. They include (i) identifying and understanding problems from a technological, social, and medical perspective; (ii) design, implementation, and evaluation of supporting hardware and software infrastructures, algorithms, and applications; and (iii) organizational strategies that facilitate integration of Pervasive Healthcare technology into the healthcare enterprise. The 2013 Pervasive Healthcare Conference was held on May 5-8, 2013 in Venice, Italy. It intended to address the above topics and concerns. The PervasiveHealth 2013 was a huge success. Attendees were from all over the world and quality research and practices were presented and discussed by world-renowned researchers and practitioners. In addition to the Conference, several workshops were held at the same time. They provided a dynamic and intimate forum for people to discuss areas of special interest within pervasive computing related to health-specific applications. The workshops afford the participants the opportunity to examine an area with a selected focus in an open environment for the free exchange of views. This issue includes three outstanding papers selected from the Workshops. The last two are regular papers submitted to the Journal. A brief introduction of each of the five articles is given next.

Article 1. Mobile health systems for bipolar disorder: The relevance of non-functional requirements in MONARCA project: One of the missions of the MONARCA EU project

is to develop and validate an approach to the treatment, management, and self-treatment of bipolar disorder disease. This paper presents a series of challenges for developing mobile health solutions for mental health as a result of the three-year activities of the MONARCA EU project. The lessons learnt on the design, development and evaluation of a mobile health system for supporting the treatment of bipolar disorder. The challenges listed and detailed in this paper may be used in future research as a starting point for identifying important non-functional requirements involved in mobile health provisioning that are fundamental for the successful implementation of mobile health services in real life contexts.

Article 2. Psychometric assessment of car-diorespiratory activity using a mobile platform: One of the aims of the European Collaborative Project INTERSTRESS is to design, develop and test an advanced ICT-based solution for the assessment and treatment of psychologi-cal stress, which is an increasingly recognized phenomenon that has negative effects on growing numbers of people. Stress assessment is a complex issue, but different studies have shown that monitoring user psychophysiologi-cal parameter during daily life can be greatly helpful in stress evaluation. This paper gives a study of a wearable biosensor platform, which is capable of collecting physiological and be-havioral parameters, in terms of hardware and processing algorithms. Moreover, the use of this wearable biosensor platform in combination with advanced simulation technologies, such as virtual reality, offers interesting opportunities for innovative personal health-care solutions to stress.

Article 3. Technologies for wellbeing and healthy living: Perspectives and challenges: It is a strange paradox that people are talking about health technology but care more about disease technology. For example, people address chronic diseases, want to change unhealthy behaviors, and aim to help health carers and nurses—but hardly ever look at those who are and want to remain healthy. In addition, as times of health outnumber periods of disease in

most persons' lifetimes. Somewhat surprisingly, technology available today is not yet optimally suited to help staying healthy. The author discuss challenges with respect to the adaption of health behavior models, long-term interaction, quality of data, design of devices, primary use of data, and life-long data. At the same time, the author suggests understanding technical systems for wellbeing as navigational systems, guiding a person through life on a healthy path.

Article 4. Ubiquity and context-aware m-learning model: A mobile virtual community approach: This paper presents a new adaptive m-learning model supporting collaborative and context-aware learning. A seamless integration between learners' location information and a set of associated learning context dimensions is used to facilitate the provision of pervasive and ubiquitous learning services. The new model adopts nearest search algorithm in order to group spatially related mobile learners, constructing learning-oriented virtual communities and achieving a collaborative learning experience. The presented model implements two virtual community construction modes, described as client-based and server-based collaboration modes. A preliminary evaluation methodol-ogy was conducted, measuring the successful implementation of the proposed new model, and confirming the establishment of the virtual community after considering a set of learning context dimensions; such as learning collabo-ration type, learning style and learners' loca-tion information. Results have confirmed that both collaboration modes were successful in establishing the virtual communities between mobile learners.

Article 5. Privacy-preserving spatial trajectory prediction based on a novel matrix representation: Since the introduction of iPhone in 2007, smartphones have become very popular (e.g., the number of worldwide smartphone sales has surpassed the number of PC sales in 2011). The feature of high mobility and small size of smartphones has created many applica-tions that are not possible or inconvenient for PCs and servers, even laptops. Location-based services (LBS), one of mobile applications,

have attracted a great attention recently. This research proposes a location-based service, which predicts a spatial trajectory based on the current and previous trajectories by using a novel matrix representation. Spatial trajectory prediction can be used in a variety of purposes such as travel recommendations and traffic control and planning, but at the same time, just like most location-based services, the user privacy concern is a major issue. Without rigorous privacy protection, users would be reluctant to use the service. The proposed method is simple but effective and user privacy is rigorously preserved at the same time because the trajectory prediction is performed at the user-side.

Traditional healthcare environments are extremely complex and challenging to manage, as they are required to cope with an assortment of patient conditions under various circumstances with a number of resource constraints. Pervasive healthcare technologies seek to respond to a variety of these pressures by successfully integrating them within existing health care environments. The 2013 Pervasive Healthcare Conference addressed a set of related technologies and concepts that help integrate healthcare more seamlessly into everyday life, regardless of space and time. This special issue consists of the five articles covering important topics of mobile health, applications, and services including (i) mobile health systems, (ii) a mobile health platform, (iii) mobile health technologies, (iv) an m-learning model, and (v) a location-based service. They are critical, contemporary issues of mobile/handheld computing, especially mobile health. The editors thank the reviewers and authors for their great help and contributions. Without them, this special issue would not be possible.

Sincerely,
Jochen Meyer
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Guest Editors
Wen-Chen Hu
Editor-in-Chief
IJHCR

Jochen Meyer studied Computer Science at the University of Oldenburg from 1989 to 1994. From 1994 to 1995, he worked as a software developer. Since 1995, he works at OFFIS Institute for Information Technology, where he first was active as a research assistant in the area of digital libraries and internet technologies. From 1998 to 2008 he was director of the division "Multimedia and Internet Information Services." Since 2008 he is director of the health department at OFFIS where he is responsible for numerous national and international research and development projects. His research areas include ambient assisted living, pervasive health, and technologies for prevention and healthy living.

Mads Frost is a postdoctoral researcher at the IT University of Copenhagen. He is a member of the Software and Systems Section and work in the Pervasive Interaction Technology (PIT) Lab. His research interests lie on the intersection of Human-Computer Interaction, Motivation, Persuasion, Pervasive and Ubiquitous Computing, and are focused towards the theory, design, construction and evaluation of healthcare systems with a focus on motivating users through technology. Dr. Frost is looking at how pervasive technology can assist patients and clinicians in the treatment process through weaving it into their everyday lives. He focuses on using technologies already present with the user - e.g. Smartphones - and focus on supporting the awareness and insight process many patients needs to go through, to learn to live and cope with their disease. Furthermore, this awareness is used to motivate the patients to make the necessary behavior changes, which are notoriously difficult to make.

Wen-Chen Hu received a BE, an ME, an MS, and a PhD, all in Computer Science, from Tamkang University, Taiwan, the National Central University, Taiwan, the University of Iowa, Iowa City, and the University of Florida, Gainesville, in 1984, 1986, 1993, and 1998, respectively. He is currently an associate professor in the Department of Computer Science of the University of North Dakota, Grand Forks. He was an assistant professor in the Department of Computer Science and Software Engineering at the Auburn University, Alabama, for years. He is the Editor-in-Chief of the International Journal of Handheld Computing Research *(IJHCR) and an associate editor of the* Journal of Information Technology Research *(JITR), and has acted as editors and editorial advisory/review board members for over 30 international journals/books and served more than 30 tracks/sessions and program committees for international conferences. He has also won a couple of awards of best papers, best reviewers, and community services. Dr. Hu has been teaching more than 10 years at the US universities and over 10 different computer/IT-related courses, and advising more than 50 graduate students. He has published over 100 articles in refereed journals, conference proceedings, books, and encyclopedias, edited seven books and conference proceedings, and solely authored a book entitled "*Internet-enabled handheld devices, computing, and programming: Mobile commerce and personal data applications.*" His current research interests include handheld/mobile/smartphone/tablet computing, location-based services, web-enabled information system such as search engines and web mining, electronic and mobile commerce systems, and web technologies. He is a member of the IEEE Computer Society and ACM (Association for Computing Machinery).*